FACT SHEET FOR NPDES PERMIT WA0023973

City of Port Angeles Wastewater Treatment Plant

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INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System (NPDES) of permits, which is administered by the Environmental Protection Agency (EPA). The EPA has delegated responsibility to administer the NPDES permit program to the state of Washington on the basis of Chapter 90.48 Revised Code of Washington (RCW), which defines the Department of Ecology's (Department) authority and obligations in administering the wastewater discharge permit program.

The regulations adopted by the state include procedures for issuing permits [Chapter 173-220 Washington Administrative Code (WAC)], technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC), water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC), and sediment management standards (Chapter 173-204 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the state is allowed. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit. One of the requirements (WAC 173-220-060) for issuing a permit under the NPDES permit program is the preparation of a draft permit and an accompanying fact sheet. Public notice of the availability of the draft permit is required at least 30 days before the permit is issued (WAC 173-220-050). The fact sheet and draft permit are available for review (see Appendix A--Public Involvement of the fact sheet for more detail on the Public Notice procedures).

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in this review have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Comments and the resultant changes to the permit will be summarized in Appendix D--Response to Comments.

GENERAL INFORMATION	
Applicant	City of Port Angeles 321 East Fifth St., P.O. Box 1150 Port Angeles, WA 98362
Facility Name and Address	City of Port Angeles Wastewater Treatment Plant 1509 East Columbia St. Port Angeles, WA 98362
Type of Treatment:	Secondary wastewater treatment
Discharge Location	Port Angeles Harbor/Strait of Juan de Fuca Latitude: 48º 07' 37.9" N Longitude: 123º 23' 53" W.
Water Body ID Number	390KRD

BACKGROUND INFORMATION

DESCRIPTION OF THE FACILITY

HISTORY

The facility was constructed in 1968-69 as a primary wastewater treatment plant. The facility consisted of a grit chamber, barminutor, clarifier, and chlorinator. Two anaerobic digesters in series stabilized sludge prior to land application or drying for landfill disposal. The facility was upgraded to secondary treatment in 1993-94. The facility now consists of mechanical and manually cleaned bar screens, grit separation and removal, trickling filter/solids contact treatment, two secondary clarifiers, two chlorine contact basins for disinfection, and dechlorination. Sludge is anaerobically digested, processed through a gravity thickener to a holding tank and belt filter press. Biosolids are hauled to the City's composting facility where it is composted and/or stored for land application..

The facility is categorized as a major facility, with a design flow of 6.7 MGD for the maximum month.

COLLECTION SYSTEM STATUS

The collection system is a separate sanitary (67 percent) and a combined sanitary and storm (33 percent) sewer system of approximately 89 miles of 6- to 30-inch diameter pipeline. The system serves approximately 3,700 acres. The system has a peak hydraulic delivery capacity to the treatment plant of 13.4 mgd. The system has ten pump stations. Ninety percent of the sewer system was installed between 1900 and 1960 and was constructed of terra cotta or concrete. The City also has approximately 41 miles of installed storm drains, none of which was constructed until the 1960s.

Even though the City has mostly 8-inch local sewers, and sometimes even as small as 6-inch, the City's original collection system was designed as a combined sewer system with storm water routed along with sanitary sewage. The oldest part of town, the area known as the "old downtown," was built with street and building storm water drainage purposely routed to the combined system, which was constructed about 1915.

The City has significant infiltration and inflow into the collection system which results in bypass of the treatment plant and the discharge of raw sewage to waters of the state during storm events. There are five combined sewer overflow (CSOs) points in the collection system. During 2000, the five CSOs had over 216 overflow events that totaled over 13,395,469 gallons of dilute sewage discharged to surface water. The City is working towards one overflow per CSO per year, and is scheduled to meet this goal in 2015.

TREATMENT PROCESSES

The Port Angeles Wastewater Treatment Plant is a trickling filter/solids contact secondary treatment plant which combines trickling filters with short detention solids contact to promote flocculation and subsequent settling. The plant is designed for a design peak month flow of 6.7 mgd. Peak secondary treatment flow is 10.6 mgd. Peak primary flow to the plant is 13.4 mgd. Flow is either pumped to the plant from Pumping Station 4 (60 percent of the total flow) or enters the force main approaching the plant from a gravity-pressure line from an elevated plateau where the Francis Street diversion manholes are located. Flow is prechlorinated to reduce odors.

All flow is normally passed through a climber type bar screen. There is provision for alternate routing through a manually cleaned bar screen as well as a non-screened emergency bypass. Two Parshall flumes meter flow to the plant's two primary sedimentation basin structures. When plant flows are less than

about 6.7 mgd, all flows is normally routed through the newer rectangular primary sedimentation basin. When flow is in excess of 6.7 mgd, flow is routed to both the rectangular and older circular basin.

Grit is removed through cyclonic de-gritting of the primary sludge. Primary sludge is pumped from the clarifiers to the mixed sludge distribution chamber and, from there, to the gravity thickener: grit is removed from the primary sludge prior to thickening.

Primary effluent joins with filtrate recycle and trickling filter circulation recycle and flows to the trickling filter circulation pumping station. Up to 10.6 mgd of flow is pumped through the two trickling filters. Flows in excess of 10.6 mgd flow through an overflow pipe to the chlorine contact tank. The plant is provided with a standby generator and dual sources of electrical power. Should the plant ever lose both sources of power, wastewater will still flow by gravity through the primaries, and then will flow to the outfall through an emergency bypass around the secondaries to prevent flooding.

Trickling filter effluent passes a channel hopper where any accumulated snails can be pumped to a de-gritting cyclone. A solids contact basin comes next. Although this unit process looks like an activated sludge facility, its short detention time serves primarily to flocculate solids in preparation for final clarification. After this flocculation, flow passes to two secondary clarifiers. Sludge withdrawn from the secondary clarifiers is recycled to the sludge re-aeration basin with a portion wasted to the gravity thickener.

Following secondary clarification, plant effluent is both chlorinated with liquid sodium hypochlorite and subsequently de-chlorinated with sodium bisulfite. The plant's outfall line extends approximately 3,500 feet off-shore and terminates in a new diffuser whose construction was completed in October of 1997.

Solids that have been thickened in the gravity thickener are pumped to the plant's two anaerobic digesters. Displaced digested sludge (biosolids) flows by gravity to a sludge holding tank. The biosolids are then dewatered in the plant's single 2.2-meter belt filter press and trucked to disposal or re-use. Currently, all biosolids are stored at the City's compost facility at the City landfill for eventual application. Filtrate recycle is metered back to the primaries at a continuous rate throughout the day to prevent slug loading.

The treatment plant has a pretreatment program. There are few Significant Industrial Users. The City Solid Waste Division has a state permit to discharge landfill leachate to the treatment plant. The treatment plant has a dozen or so minor industrial users consisting of industries like laundries, printers, breweries, film developers, seafood, and leachate.

The treatment plant is a major facility that requires an operator certified for a Class 3 plant to be in responsible charge of the day-to-day operation of the wastewater treatment plant.

DISCHARGE OUTFALL

The outfall pipe extends 3,500 feet offshore into 60 feet deep water in Port Angeles Harbor. The outfall pipe is 27-inch diameter concrete pipe. During the late 90s, a new diffuser section was installed on the end of the outfall. The new diffuser section is 250 feet long and is a 42-inch HDPE pipe. The new diffuser has 13 discharge nozzles, each of which is 6 inches in diameter. The nozzle spacing is 20 feet on center with alternating nozzle orientation. The diffuser could handle up to 21 MGD.

Secondary treated and disinfected effluent is discharged from the facility via Port Angeles Harbor into the Strait of Juan de Fuca.

RESIDUAL SOLIDS

The treatment facilities remove solids during the treatment of the wastewater at the headworks (grit and screenings), and at the primary and secondary clarifiers, in addition to incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the equipment. Grit, rags, scum and screenings are drained and disposed of as solid waste at the local landfill.

Organic biosolids are generated during wastewater treatment at the treatment plant. Biosolids are produced in the form of primary sludge from the primary sedimentation and secondary sludge from the trickling filter/solids contact process. These solids are co-thickened in a gravity tank, stabilized by the anaerobic (no oxygen present) digestion process, and de-watered by means of a belt filter press. The end product of that processing sequence is referred to as biosolids.

PERMIT STATUS

The previous permit for this facility was issued on November 30, 1993. The previous permit placed effluent limitations on five-day Carbonaceous Biochemical Oxygen Demand ($CBOD_5$) (Monthly Average 25 mg/L, 905 lbs/day, 85 percent removal, Weekly Average 40 mg/L, 1358 lbs/day), Total Suspended Solids (TSS) (Monthly Average 30 mg/L, 882 lbs/day, 85 percent removal, Weekly Average 45 mg/L, 1323 lbs/day), pH (shall not be outside the range of 6.0-9.0), Fecal Coliform bacteria (Monthly Average 200/100 ml, Weekly Average 400/100 ml), Total Residual Chlorine (Monthly Average 0.25 mg/L and Daily Maximum 0.65 mg/L) and Silver (Monthly Average 30.0 µg/l and Daily Maximum 60.0 µg/l).

An application for permit renewal was submitted to the Department on December 13, 2000, and accepted by the Department on June 11, 2001.

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

The facility received its last inspection on April 6, 2001. A previous compliance inspection was conducted on May 19, 1999.

During the history of the previous permit, the Permittee has remained in compliance, based on Discharge Monitoring Reports (DMRs) submitted to the Department and inspections conducted by the Department.

WASTEWATER CHARACTERIZATION

The concentration of pollutants in the discharge was reported in the NPDES application and in discharge monitoring reports. The effluent is characterized as follows:

Table 1: Wastewater Characterization

Parameter	Concentration
pH	6.6-7.8
Temperature (Winter)	11.6 °C
Temperature (Summer)	16.3 °C
$CBOD_5$	5 mg/L
Fecal Coliform	75 colonies/100 ml
Total Suspended Solids (TSS)	6 mg/L
Ammonia (as N)	7.0 mg/L
Chlorine (Total Residual)	0.12 mg/L
Dissolved Oxygen	6.6 mg/L
Total Kjeldahl Nitrogen(TKN)	7.6 mg/L
Nitrate plus Nitrite Nitrogen	9.3 mg/L

Oil and Grease	1.8 mg/L
Antimony	0.01 mg/L
Arsenic	0.001 mg/L
Beryllium	0.002 mg/L
Cadmium	0.001 mg/L
Chromium	0.005 mg/L
Copper	0.03 mg/L
Lead	0.004 mg/L
Mercury	0.0002 mg/L
Nickel	0.007 mg/L
Selenium	0.002 mg/L
Silver	0.01 mg/L
Thallium	0.02 mg/L
Zinc	0.03 mg/L
Cyanide	0.008 mg/L
Total Phenolic Compounds	0.005 mg/L
Molybdenum	0.007 mg/L
Petroleum Hydrocarbons	1.0 mg/L
Methylene Chloride	3.6 µg/l
Bis(2-Ethylhexyl)Phthalate	7.0 µg/l

The wastewater characterization shows a well treated effluent. The conventional pollutants average low levels in the effluent. Most metals were at or near the detection limits of the analytical methods. Only two organics had hits above detection limits, and these two, methylene chloride and bis (2-ethylhexyl) phthalate, were at low levels and could be from lab contamination or plastic pipes. There are no toxic pollutants at levels of concern.

PROPOSED PERMIT LIMITATIONS

Federal and state regulations require that effluent limitations set forth in a NPDES permit must be either technology- or water quality-based. Technology-based limitations for municipal discharges are set by regulation (40 CFR 133, and Chapters 173-220 and 173-221 WAC). Water quality-based limitations are based upon compliance with the Surface Water Quality Standards (Chapter 173-201A WAC), Ground Water Standards (Chapter 173-200 WAC), Sediment Quality Standards (Chapter 173-204 WAC) or the National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992.) The most stringent of these types of limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

The limits in this permit are based in part on information received in the application. The effluent constituents in the application were evaluated on a technology- and water quality-basis. The limits necessary to meet the rules and regulations of the state of Washington were determined and included in this permit. The Department does not develop effluent limits for all pollutants that may be reported on the application as present in the effluent**.** Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation**.** Effluent limits are not always developed for pollutants that may be in the discharge but not reported as present in the application. In those circumstances the permit does not authorize discharge of the non-reported pollutants. Effluent discharge conditions may change from the conditions reported in the permit application. If significant changes occur in any constituent, as described in 40 CFR 122.42(a), the Permittee is required to notify the Department. The Permittee may be in violation of the permit until the permit is modified to reflect additional discharge of pollutants.

DESIGN CRITERIA

In accordance with WAC 173-220-150 (1)(g), flows or waste loadings shall not exceed approved design criteria.

The design criteria for this treatment facility are taken from existing NPDES permit and are as follows:

Table 2: Design Standards for City of Port Angeles WWTP.

Parameter	Design Quantity
Monthly average flow (max. month)	6.7 MGD
Monthly average dry weather flow	3.3 MGD
Max day peak flow	13.4 MGD
BOD_5 influent loading (max. month)	6,030 lb./day
TSS influent loading (max. month)	5,880 lb./day
Design population equivalent	24,800

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

Municipal wastewater treatment plants are a category of discharger for which technology-based effluent limits have been promulgated by federal and state regulations. These effluent limitations are given in the Code of Federal Regulations (CFR) 40 CFR Part 133 (federal) and in Chapter 173-221 WAC (state). These regulations are performance standards that constitute all known available and reasonable methods of prevention, control, and treatment for municipal wastewater.

The following technology-based limits for pH, fecal coliform, $CBOD_5$, and TSS are taken from Chapter 173-221 WAC are:

Table 3: Technology-based Limits.

Parameter	Limit
pH:	shall be within the range of 6 to 9 standard units.
Fecal Coliform Bacteria	Monthly Geometric Mean = 200 organisms/100 mL Weekly Geometric Mean = 400 organisms/100 mL
$CBOD_5$ (concentration)	Average Monthly Limit is the most stringent of the following: - 25 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 40 mg/L
TSS (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L
Chlorine	Average Monthly Limit = 0.25 mg/L Daily Maximum Limit = 0.65 mg/L

The existing permit has a chlorine limit of 0.25 mg/L on a monthly average basis and a Daily Maximum limit of 0.65 mg/L. The facility is able to comply with these limits. The proposed permit includes the same limits.

The following technology-based mass limits are based on WAC 173-220-130(3)(b) and 173-221-030(11)(b).

Monthly effluent mass loadings (lbs/day) were calculated as the maximum monthly influent design loading (6030 lbs/day $CBOD_5$) x 0.15 = 905 lbs/day.

The weekly average effluent mass loading is calculated as 1.5 x monthly loading = 1358 lbs/day.

SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will meet established Surface Water Quality Standards. The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) is a state regulation designed to protect the beneficial uses of the surface waters of the state. Water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin-wide total maximum daily loading study (TMDL).

NUMERICAL CRITERIA FOR THE PROTECTION OF AQUATIC LIFE

"Numerical" water quality criteria are numerical values set forth in the state of Washington's Water Quality Standards for Surface Waters (Chapter 173-201A WAC). They specify the levels of pollutants allowed in a receiving water while remaining protective of aquatic life. Numerical criteria set forth in the Water Quality Standards are used along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limitations, they must be used in a permit.

NUMERICAL CRITERIA FOR THE PROTECTION OF HUMAN HEALTH

The state was issued 91 numeric water quality criteria for the protection of human health by the U.S. EPA (EPA 1992). These criteria are designed to protect humans from cancer and other disease and are primarily applicable to fish and shellfish consumption and drinking water from surface waters.

NARRATIVE CRITERIA

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the state of Washington.

ANTIDEGRADATION

The state of Washington's Antidegradation Policy requires that discharges into a receiving water shall not further degrade the existing water quality of the water body. In cases where the natural conditions of a receiving water are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. Similarly, when the natural conditions of a receiving water are of higher quality

than the criteria assigned, the natural conditions shall constitute the water quality criteria. More information on the state Antidegradation Policy can be obtained by referring to WAC 173-201A-070.

The Department has reviewed existing records and is able to determine that ambient water quality is lower than the designated classification criteria given in Chapter 173-201A WAC for Dissolved Oxygen. There were six Dissolved Oxygen excursions beyond the criterion at the Department ambient monitoring station PAH003 between 1985 and 1987. Even though the dissolved oxygen of Port Angeles Harbor has not been sampled for over ten years, Department staff believe that it is still a problem based on the lack of biota and deep accumulations of bark. Otherwise the Ambient condition meet the designated classification. The discharges authorized by this proposed permit should not cause a loss of beneficial uses.

CRITICAL CONDITIONS

Surface water quality-based limits are derived for the waterbody's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic water body uses.

MIXING ZONES

The Water Quality Standards allow the Department to authorize mixing zones around a point of discharge in establishing surface water quality-based effluent limits. Both "acute" and "chronic" mixing zones may be authorized for pollutants that can have a toxic effect on the aquatic environment near the point of discharge. The concentration of pollutants at the boundary of these mixing zones may not exceed the numerical criteria for that type of zone. Mixing zones can only be authorized for discharges that are receiving all known, available, and reasonable methods of prevention, control and treatment (AKART) and in accordance with other mixing zone requirements of WAC 173-201A-100.

The National Toxics Rule (EPA, 1992) allows the chronic mixing zone to be used to meet human health criteria.

DESCRIPTION OF THE RECEIVING WATER

The facility discharges to Port Angeles Harbor which is designated as a Class A estuarine receiving water in the vicinity of the outfall. The discharge is on the edge of the outer Harbor, and quickly enters the Strait of Juan de Fuca, which is designated as a Class AA marine receiving water. Other nearby point source outfalls include CSO discharges. Significant nearby non-point sources of pollutants include storm water runoff. Characteristic uses include the following:

> water supply (domestic, industrial, agricultural); stock watering; fish migration; fish and shellfish rearing, spawning and harvesting; wildlife habitat; primary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation.

Water quality of this class shall meet or exceed the requirements for all or substantially all uses.

SURFACE WATER QUALITY CRITERIA

Applicable criteria are defined in Chapter 173-201A WAC for aquatic biota. In addition, U.S. EPA has promulgated human health criteria for toxic pollutants (EPA 1992). Criteria for this discharge are summarized below:

Fecal Coliforms	14 organisms/100 mL maximum geometric mean

Dissolved Oxygen	6 mg/L minimum
Temperature	16.0 degrees Celsius maximum or incremental increases above background
pH	7.0 to 8.5 standard units
Turbidity	less than 5 NTUs above background
Toxics	No toxics in toxic amounts (see Appendix C for numeric criteria for toxics of concern for this discharge)

Ambient monitoring data is available for the inner Harbor area. Sediment monitoring in the area of the outfall and CSOs has come up clean. The Effluent has passed bioassay tests. The Harbor is on the last 303(d) list for low dissolved oxygen. The probable source is the deep accumulations of bark in the Harbor from past timber industry practices. There is no indication that the discharge is having any effect on the DO level in the Harbor.

CONSIDERATION OF SURFACE WATER QUALITY-BASED LIMITS FOR NUMERIC CRITERIA

Pollutant concentrations in the proposed discharge exceed water quality criteria with technology-based controls which the Department has determined to be AKART. A mixing zone is authorized in accordance with the geometric configuration, flow restriction, and other restrictions for mixing zones in Chapter 173-201A WAC and are defined as follows:

Chronic Zone is 260 feet in any horizontal direction from the diffuser.

Acute Zone is 26 feet in any horizontal direction from the diffuser.

The dilution factors of effluent to receiving water that occur within these zones have been determined at the critical condition by the use of the EPA PLUMES model in the January 1996 *Final Outfall Mixing Zone Study*. The dilution factors have been determined to be, from the study:

	Acute	Chronic
Aquatic Life	38	510
Human Health, Carcinogen		510
Human Health, Non-carcinogen		510

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near field) or at a considerable distance from the point of discharge (far field). Toxic pollutants, for example, are near-field pollutants--their adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as BOD is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating water quality-based effluent limits varies with the point at which the pollutant has its maximum effect.

The derivation of water quality-based limits also takes into account the variability of the pollutant concentrations in both the effluent and the receiving water.

The critical conditions for the Port Angeles Harbor are a chronic critical condition of the 50th percentile flow and a plant flow of 5.3 mgd (highest monthly average plant flow), and a acute critical condition of the 10th percentile flow and a plant flow of 13.5 mgd (highest daily maximum plant flow).

Parameter	Value used
Acute Velocity	0.05 m/s at 40 feet
Chronic Velocity	0.140 m/s at 40 feet
Velocity Direction	90°
Depth	60 feet
Average Density	23.41 sigma-t units
Maximum Density	24.96 sigma-t units
Temperature	5-15° C
pH (high)	8.4
Total Ammonia-N	0.4 mg/L
Salinity	20-30 g/kg
All Metals	0.0 (below detection limits)

$CBOD_5$--Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters. Therefore, the technology-based effluent limitation for $CBOD_5$ was placed in the permit.

The impact of BOD on the receiving water was evaluated, at critical condition and with the technology-based effluent limitation for $CBOD_5$ described under "Technology-Based Effluent Limitations" above. This discharge with technology-based limitations results in a small amount of BOD loading relative to the large amount of dilution occurring in the receiving water at critical conditions. Technology-based limitations will be protective of dissolved oxygen criteria in the receiving water.

Temperature--The impact of the discharge on the temperature of the receiving water was modeled by simple mixing analysis at critical condition. The receiving water temperature at the critical condition is 15^oC and the effluent temperature is 16^oC. The predicted resultant temperature at the boundary of the chronic mixing zone is 15^oC and the incremental rise is 0.002^oC.

Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters. Therefore, no effluent limitation for temperature was placed in the proposed permit.

pH--Because of the high buffering capacity of marine water, compliance with the technology-based limits of 6 to 9 will assure compliance with the Water Quality Standards for Surface Waters.

Fecal coliform--The numbers of fecal coliform were modeled by simple mixing analysis using the technology-based limit of 400 organisms per 100 ml and a dilution factor of 510.

Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters with the technology-based limit. Therefore, the technology-based effluent limitation for fecal coliform bacteria was placed in the proposed permit.

Toxic Pollutants--Federal regulations (40 CFR 122.44) require NPDES permits to contain effluent limits for toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. This process occurs concurrently with the derivation of technology-based effluent limits. Facilities with technology-based effluent limits defined in regulation are not exempted from meeting the Water Quality Standards for Surface Waters or from having surface water quality-based effluent limits.

The following toxics were determined to be present in the discharge: chlorine, ammonia, and heavy metals. A reasonable potential analysis (See Appendix C) was conducted on these parameters to determine whether or not effluent limitations would be required in this permit.

The determination of the reasonable potential for chlorine, ammonia, and heavy metals to exceed the water quality criteria was evaluated with procedures given in EPA, 1991 (Appendix C) at the critical condition. The parameters used in the critical condition modeling are as follows: acute dilution factor 38, chronic dilution factor 510, receiving water temperature of 5-15^{o}C, and receiving water salinity of 20-30 g/kg.

Valid ambient background data was available for chlorine, ammonia, and heavy metals. Calculations using all applicable data resulted in a determination that there is no reasonable potential for this discharge to cause a violation of water quality standards. This determination assumes that the Permittee meets the other effluent limits of this permit.

WHOLE EFFLUENT TOXICITY

The Water Quality Standards for Surface Waters require that the effluent not cause toxic effects in the receiving waters. Many toxic pollutants cannot be detected by commonly available detection methods. However, toxicity can be measured directly by exposing living organisms to the wastewater in laboratory tests and measuring the response of the organisms. Toxicity tests measure the aggregate toxicity of the whole effluent, and therefore this approach is called whole effluent toxicity (WET) testing. Some WET tests measure acute toxicity and other WET tests measure chronic toxicity.

Acute toxicity tests measure mortality as the significant response to the toxicity of the effluent. Dischargers who monitor their wastewater with acute toxicity tests are providing an indication of the potential lethal effect of the effluent to organisms in the receiving environment.

Chronic toxicity tests measure various sublethal toxic responses such as retarded growth or reduced reproduction. Chronic toxicity tests often involve either a complete life cycle test of an organism with an extremely short life cycle or a partial life cycle test on a critical stage of one of a test organism's life cycles. Organism survival is also measured in some chronic toxicity tests.

Accredited WET testing laboratories have the proper WET testing protocols, data requirements, and reporting format. Accredited laboratories are knowledgeable about WET testing and capable of calculating an NOEC, LC_{50}, EC_{50}, $IC_{25,}$ etc. All accredited labs have been provided the most recent version of the Department of Ecology Publication # WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria* which is referenced in the permit. Any Permittee interested in receiving a copy of this publication may call the Ecology Publications Distribution Center 360-407-7472 for a copy. The Department recommends that Permittees send a copy of the acute or chronic toxicity sections(s) of their permits to their laboratory of choice.

The WET tests during effluent characterization indicate that no reasonable potential exists to cause receiving water acute toxicity, and the Permittee will not be given an acute WET limit and will only be required to retest the effluent prior to application for permit renewal in order to demonstrate that acute toxicity has not increased in the effluent.

If the Permittee makes process or material changes which, in the Department's opinion, results in an increased potential for effluent toxicity, then the Department may require additional effluent characterization in a regulatory order, by permit modification, or in the permit renewal. Toxicity is assumed to have increased if WET testing conducted for submission with a permit application fails to meet the performance standards in WAC 173-205-020, "whole effluent toxicity performance standard."

The Permittee may demonstrate to the Department that changes have not increased effluent toxicity by performing additional WET testing after the time the process or material changes have been made.

The WET tests during effluent characterization indicate that no reasonable potential exists to cause receiving water chronic toxicity, and the Permittee will not be given a chronic WET limit and will only be required to retest the effluent prior to application for permit renewal in order to demonstrate that chronic toxicity has not increased in the effluent.

If the Permittee makes process or material changes which, in the Department's opinion, results in an increased potential for effluent toxicity, then the Department may require additional effluent characterization in a regulatory order, by permit modification, or in the permit renewal. Toxicity is assumed to have increased if WET testing conducted for submission with a permit application fails to meet the performance standards in WAC 173-205-020, "whole effluent toxicity performance standard." The Permittee may demonstrate to the Department that changes have not increased effluent toxicity by performing additional WET testing after the time the process or material changes have been made.

HUMAN HEALTH

Washington's water quality standards now include 91 numeric health-based criteria that must be considered in NPDES permits. These criteria were promulgated for the state by the U.S. EPA in its National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992).

The Department has determined that the effluent is likely to have chemicals of concern for human health. The discharger's high priority status is based on the discharger's status as a major discharger.

A determination of the discharge's potential to cause an exceedance of the water quality standards was conducted as required by 40 CFR 122.44(d). The reasonable potential determination was evaluated with procedures given in the Technical Support Document for Water Quality-Based Toxics Control (EPA/505/2-90-001) and the Department's Permit Writer's Manual (Ecology Publication 92-109, July, 1994). The determination indicated that the discharge has no reasonable potential to cause a violation of water quality standards, thus an effluent limit is not warranted.

SEDIMENT QUALITY

The Department has promulgated aquatic sediment standards (Chapter 173-204 WAC) to protect aquatic biota and human health. These standards state that the Department may require Permittees to evaluate the potential for the discharge to cause a violation of applicable standards (WAC 173-204-400).

The Department has determined that this discharge has the potential to cause a violation of the sediment quality standards because of the number and volume of CSO discharges. A condition has been placed in the proposed permit which requires the Permittee to demonstrate that either the point of discharge is not an area of deposition or, if the point of discharge is a depositional area, that there is not an accumulation of toxics in the sediments.

GROUND WATER QUALITY LIMITATIONS

The Department has promulgated Ground Water Quality Standards (Chapter 173-200 WAC) to protect uses of ground water. Permits issued by the Department shall be conditioned in such a manner so as not to allow violations of those standards (WAC 173-200-100).

This Permittee has no discharge to ground and therefore no limitations are required based on potential effects to ground water.

COMPARISON OF EFFLUENT LIMITS WITH THE EXISTING PERMIT ISSUED NOVEMBER 30,1993.

Existing Limits	Proposed Limits
$CBOD_5$: Monthly Average 25 mg/L, 905 lbs/day,85% removal; Weekly Average 40 mg/L, 1358 lbs/day	$CBOD_5$: Monthly Average 25 mg/L, 905 lbs/day,85% removal; Weekly Average 40 mg/L, 1358 lbs/day
TSS: Monthly Average 30 mg/L, 882 lbs/day,85% removal; Weekly Average 45 mg/L, 1323 lbs/day	TSS: Monthly Average 30 mg/L, 882 lbs/day,85% removal; Weekly Average 45 mg/L, 1323 lbs/day
Fecal Coliform Bacteria: Monthly Average 200/100 ml; Weekly Average 400/100 ml	Fecal Coliform Bacteria: Monthly Average 200/100 ml; Weekly Average 400/100 ml
pH: Shall not be outside the range of 6.0-9.0	pH: Shall not be outside the range of 6.0-9.0
Chlorine (Total Residual): Monthly Average 0.25 mg/L; Daily Maximum 0.65 mg/L	Chlorine (Total Residual): Monthly Average 0.25 mg/L; Daily Maximum 0.65 mg/L
Silver (Total Recoverable): Monthly Average 30.0 µg/l; Daily Maximum 60.0 µg/l	No Silver limit

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are required (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and the effluent limitations are being achieved. Other monitoring is required to demonstrate that the discharge is not affecting the biota or sediments.

Monitoring of sludge quantity and quality is necessary to determine the appropriate uses of the sludge. Sludge monitoring is required by the current state and local solid waste management program and also by EPA under 40 CFR 503.

The monitoring schedule is detailed in the proposed permit under Condition S.2. Specified monitoring frequencies take into account the quantity and variability of discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring. The required monitoring frequency is consistent with agency guidance given in the current version of Ecology's *Permit Writer's Manual* (July 1994) for a Trickling Filter Plant of greater than 2.0 MGD average design flow.

The monitoring for $CBOD_5$ and TSS were reduced based on past performance. The monitoring for silver was eliminated based on silver never being detected in the effluent.

As a pretreatment POTW, the City of Port Angeles is required to have influent, final effluent, and sludge sampled for toxic pollutants in order to characterize the industrial input. Sampling is also done to determine if pollutants interfere with the treatment process or pass through the plant to the sludge or the receiving water. The monitoring data will be used by the Department or the City of Port Angeles to develop local limits which commercial and industrial users must meet.

LAB ACCREDITATION

With the exception of certain parameters the permit requires all monitoring data to be prepared by a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, *Accreditation of Environmental Laboratories.* The laboratory at this facility is accredited (# M023) for: BOD/COD, Total Chlorine Residual, DO, pH, TSS, Fecal Coliforms, and Total Coliforms.

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The conditions of S3 are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-220-210).

PREVENTION OF FACILITY OVERLOADING

Overloading of the treatment plant is a violation of the terms and conditions of the permit. To prevent this from occurring, RCW 90.48.110 and WAC 173-220-150 require the Permittee to take the actions detailed in proposed permit requirement S.4 to plan expansions or modifications before existing capacity is reached and to report and correct conditions that could result in new or increased discharges of pollutants. Condition S.4 restricts the amount of flow.

OPERATION AND MAINTENANCE (O&M)

The proposed permit contains Condition S.5 as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

The proposed permit does not require submission of an updated O&M manual for the entire sewage system. If the Permittee chooses to modify sections of the O&M manual, then those sections should be submitted to the Department for review and approval.

RESIDUAL SOLIDS HANDLING

To prevent water quality problems the Permittee is required in permit Condition S7 to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and state Water Quality Standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503. The disposal of other solid waste is under the jurisdiction of the Clallam County Health Department.

Requirements for monitoring sewage sludge and recordkeeping are included in this permit. This information will by used by the Department to develop or update local limits and is also required under 40 CFR 503.

PRETREATMENT

To provide more direct and effective control of pollutants discharged, the City of Port Angeles has been delegated permitting, monitoring and enforcement authority for minor industrial users (MIUs) discharging to their treatment system. The Department oversees the delegated Industrial Pretreatment Program to assure compliance with federal pretreatment regulations (40 CFR Part 403) and state regulations (Chapter

90.48 RCW and Chapter 173-216 WAC). The Department also issues permits for significant industrial users.

An industrial user survey may be required to determine the extent of compliance of all industrial users of the sanitary sewer and wastewater treatment facility with federal pretreatment regulations (40 CFR Part 403 and Sections 307(b) and 308 of the Clean Water Act), with state regulations (Chapter 90.48 RCW and Chapter 173-216 WAC), and with local ordinances.

Federal and State Pretreatment Program Requirements

Under the terms of the addendum to the "Memorandum of Understanding between Washington Department of Ecology and the United States Environmental Protection Agency, Region 10" (1986), the Department of Ecology (Department) has been delegated authority to administer the Pretreatment Program [i.e., act as the Approval Authority for oversight of delegated Publicly Owned Treatment Works (POTWs)]. Under this delegation of authority, the Department has exercised the option of issuing wastewater discharge permits for significant industrial users discharging to this POTWs, while the department has delegated authority to the POTW to issue wastewater discharge permits to minor industrial users.

There are a number of functions required by the Pretreatment Program which the Department is delegating to this Permittee, since they are in a better position to implement the requirements (e.g. Issuing permits to MIUs). The requirements for a Pretreatment Program are contained in Title 40, part 403 of the Code of Federal Regulations. Under the requirements of the Pretreatment Program [40 CFR 403.8(f)(1)(iii)], the Department is required to approve, condition, or deny new discharges or a significant increase in the discharge for existing significant industrial users (SIUs) [40 CFR 403.8 (f)(1)(i)].

The Department is responsible for issuing State Waste Discharge Permits to SIUs. The Permittee is responsible for issuing permits for minor industrial users of the Permittee's sewer system. Significant Industrial dischargers must obtain a permit from the Department prior to the Permittee accepting the discharge [WAC 173-216-110(5)]. (Industries discharging wastewater that is similar in character to domestic wastewater are not required to obtain a permit. Such dischargers should contact the Department to determine if a permit is required.) Significant Industrial dischargers need to apply for a State Waste Discharge Permit 60 days prior to commencing discharge. The conditions contained in the permits will include any applicable conditions for categorical discharges, loading limitations included in contracts with the POTW, and other conditions necessary to assure compliance with state water quality standards and biosolids standards.

The Department requires this POTW to fulfill some of the functions required for the Pretreatment Program in the NPDES permit (e.g. Issuing permits to MIUs). The POTW's NPDES permit will require that all SIUs currently discharging to the POTW be identified and notified of the requirement to apply for a wastewater discharge permit from the Department. None of the obligations imposed on the POTW relieve an industrial or commercial discharger of its primary responsibility for obtaining a wastewater discharge permit (if required), including submittal of engineering reports prior to construction or modification of facilities [40 CFR 403.12(j) and WAC 173-216-070 and WAC 173-240-110, et seq.].

Wastewater Permit Required

RCW 90.48 and WAC 173-216-040 require SIUs to obtain a permit prior to discharge of industrial waste to the Permittee's sewerage system. This provision prohibits the POTW from accepting industrial wastewater from any such dischargers without authorization from the Department.

Requirements for Routine Identification and Reporting of Industrial Users

The NPDES permit requires POTWs to routine measures to identify all existing, new, and proposed SIUs and potential significant industrial users (PSIUs) discharging to the Permittee's sewerage system. Examples of such routine measures include regular review of business tax licenses for existing businesses and review of water billing records and existing connection authorization records. System maintenance personnel can also be diligent during performance of their jobs in identifying and reporting as-yet unidentified industrial dischargers. Local newspapers, telephone directories, and word-of-mouth can also be important sources of information regarding new or existing discharges. The POTW is required to notify a significant industrial discharger, in writing, of their responsibilities regarding application for a State waste discharge permit and to send a copy of the written notification to the Department. The Department will then take steps to solicit a State waste discharge permit application.

Annual Submittal of Pretreatment Report

This provision requires the POTW to submit annually a list of existing and proposed industrial users. This requirement is intended to update the Department on an annual basis of the status of industrial users in the POTW's service area, without requiring the POTW to go through the process of performing a formal Industrial User Survey. This provision is normally applied to POTWs not serving industrial or commercial users. Although this permit does not require performance of an Industrial User Survey, the Permittee is nevertheless required under the previous section, to take adequate continuous routine measures to identify existing and new industrial discharges.

Duty to Enforce Discharge Prohibitions

The POTW is prohibited from authorizing or permitting an industrial discharger to discharge certain types of waste into the sanitary sewer. They are prohibited to accept pollutants which cause pass through or interference. The definitions of pass-through and interference are in Appendix B of the fact sheet.

The POTW is prohibited from accepting certain specific types of wastes, namely those which are explosive, flammable, excessively acidic, basic, otherwise corrosive, or obstructive to the system. In addition wastes with excessive BOD, petroleum based oils, or which result in toxic gases are prohibited to be discharged. The regulatory basis for these prohibitions is 40 CFR Part 403, with the exception of the pH provisions which are based on WAC 173-216-060.

Also prohibited are certain types of discharges unless the POTW receives prior authorization from the Department. The discharges include cooling water in significant volumes, storm water and other direct inflow sources, and wastewaters significantly affecting system hydraulic loading, which do not require treatment.

Support by the Department for Existing Partial Pretreatment Program by POTW

The Department has committed to providing technical and legal assistance to the Permittee in fulfilling these joint obligations, in particular assistance with maintaining an adequate sewer use ordinance, notification procedures, enforcement guidelines, and maintaining local limits and inspection procedures.

COMBINED SEWER OVERFLOWS

In accordance with RCW 90.48.480 and Chapter 173-245 WAC, proposed permit Condition S.11 requires the Permittee to submit an annual Combined Sewer Overflow (CSO) report and to update its CSO reduction plan at the time of permit renewal.

OUTFALL EVALUATION

Proposed permit Condition S.12 requires the Permittee to conduct an outfall inspection and submit a report detailing the findings of that inspection. The purpose of the inspection is to determine the condition of the discharge pipe and diffusers and to determine if sediment is accumulating in the vicinity of the outfall.

GENERAL CONDITIONS

General Conditions are based directly on state and federal law and regulations and have been standardized for all individual municipal NPDES permits issued by the Department.

PERMIT ISSUANCE PROCEDURES

PERMIT MODIFICATIONS

The Department may modify this permit to impose numerical limitations, if necessary to meet Water Quality Standards, Sediment Quality Standards, or Ground Water Standards, based on new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

The Department may also modify this permit as a result of new or amended state or federal regulations.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to protect human health, aquatic life, and the beneficial uses of waters of the State of Washington. The Department proposes that this permit be issued for five years.

REFERENCES FOR TEXT AND APPENDICES

Beak Consultants Incorporated

1997. City of Port Angeles NPDES Sediment Monitoring Report. Project 22192.270

1994. City of Port Angeles Outfall and CSO Sediment Baseline sampling and Analysis Plan (Revised). Project 22192.200

Brown and Caldwell

1997. City of Port Angeles NPDES Application for Permit to Discharge Wastewater. 3772-04/5

1997. Bid Documents for Wastewater Treatment Plant Outfall Diffuser. Project No. 95-09

1996. City of Port Angeles Outfall Diffuser Engineering Report. 2526

1996. City of Port Angeles Final Outfall Mixing Zone Study. 2526-02.

City of Port Angeles

2001. Reducing monitoring requirements (NPDES Permit No. WA-002397-3). Letter and attachments from Jeff D. Young (WTP Superintendent) to Dave Dougherty (Ecology).

2001. NPDES Permit No. WA-002397-3 CSO annual report 2000. Letter and attachments from Jeff D. Young (WTP Superintendent) to Dave Dougherty (Ecology).

2000. NPDES Permit No. WA-002397-3 Renewal Application. Letter and attachments from Jeff D. Young (WTP Superintendent) to Dave Dougherty (Ecology).

1999. CSO Report. Letter and attachments from Stephen Sperr (Utility Engineer) to Darrel Anderson (Ecology).

1999. Annual I/I Evaluation and Annual Assessment for Flow and Waste Load. Letter and attachments from Kevin S. Curtis (WTP Superintendent) to Chuck Hoffman (Ecology).

1996-2001. Discharge Monitoring Reports. WTP

Environmental Protection Agency (EPA)

1995. Combined Sewer Overflows Guidance for Permit Writers. EPA 832-B-95-008.

1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.

1991. Technical Support Document for Water Quality-based Toxics Control. EPA/505/2-90-001.

1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington, D.C.

1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water. EPA/600/6-85/002a.

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Tsivoglou, E.C., and J.R. Wallace.

1972. Characterization of Stream Reaeration Capacity. EPA-R3-72-012. (Cited in EPA 1985 op.cit.)

Washington State Department of Ecology.

2001. Compliance Inspection of Port Angeles Wastewater Treatment Plant. Letter and attachments from Dave Dougherty (Ecology) to Jeff D. Young (WTP Superintendent).

1999. Compliance Inspection of Port Angeles Wastewater Treatment Plant. By Charles Hoffman.

1994. Permit Writer's Manual. Publication Number 92-109

1993. NPDES Permit and Fact Sheet. WA-002397-3 issued to City of Port Angeles.

Water Pollution Control Federation.

1976. Chlorination of Wastewater.

Wright, R.M., and A.J. McDonnell.

1979. In-stream Deoxygenation Rate Prediction. Journal Environmental Engineering Division, ASCE. 105(EE2). (Cited in EPA 1985 op.cit.)

APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to reissue a permit to the applicant listed on page 1 of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public notice of application was published on August 19, 2001, and August 26, 2001, in *Peninsula Daily News* to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

The Department will publish a Public Notice of Draft (PNOD) on March 28, 2002, in *Peninsula Daily News* to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator
Department of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775.

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the 30-day comment period to the address above. The request for a hearing shall indicate the interest of the party and the reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-220-090). Public notice regarding any hearing will be circulated at least 30 days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing (WAC 173-220-100).

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within 30 days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, (360) 407-6278, or by writing to the address listed above.

This permit and fact sheet were written by Dave Dougherty.

APPENDIX B--GLOSSARY

Acute Toxicity--The lethal effect of a pollutant on an organism that occurs within a short period of time, usually 48 to 96 hours.

AKART-- An acronym for "all known, available, and reasonable methods of prevention, control, and treatment".

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation --The highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month (except in the case of fecal coliform). The daily discharge is calculated as the average measurement of the pollutant over the day.

Average Weekly Discharge Limitation -- The highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week. The daily discharge is calculated as the average measurement of the pollutant over the day.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD_5--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD_5 is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of a treatment facility.

CBOD5 – The quantity of oxygen utilized by a mixed population of microorganisms acting on the nutrients in the sample in an aerobic oxidation for five days at a controlled temperature of 20 degrees Celsius, with an inhibitory agent added to prevent the oxidation of nitrogen compounds. The method for determining CBOD5 is given in 40 CFR Part 136.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Chronic Toxicity--The effect of a pollutant on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean Water Act (CWA)--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Combined Sewer Overflow (CSO)--The event during which excess combined sewage flow caused by inflow is discharged from a combined sewer, rather than conveyed to the sewage treatment plant because either the capacity of the treatment plant or the combined sewer is exceeded.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the percent removal requirement. Additional sampling may be conducted.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing a minimum of four discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Continuous Monitoring –Uninterrupted, unless otherwise noted in the permit.

Critical Condition--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Dilution Factor--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the effluent fraction e.g., a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

Engineering Report--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial User-- A discharger of wastewater to the sanitary sewer which is not sanitary wastewater or is not equivalent to sanitary wastewater in character.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Infiltration and Inflow (I/I)--"Infiltration" means the addition of ground water into a sewer through joints, the sewer pipe material, cracks, and other defects. "Inflow" means the addition of precipitation-caused drainage from roof drains, yard drains, basement drains, street catch basins, etc., into a sewer.

Interference -- A discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal and;

Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to subtitle D of the SWDA), sludge regulations appearing in 40 CFR Part 507, the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Major Facility--A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

Minor Facility--A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Mixing Zone--A volume that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in State regulations (Chapter 173-201A WAC).

National Pollutant Discharge Elimination System (NPDES)--The NPDES (Section 402 of the Clean Water Act) is the Federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the State of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both State and Federal laws.

Pass through -- A discharge which exits the POTW into waters of the State in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation), or which is a cause of a violation of State water quality standards.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Potential Significant Industrial User--A potential significant industrial user is defined as an Industrial User which does not meet the criteria for a Significant Industrial User, but which discharges wastewater meeting one or more of the following criteria:

a. Exceeds 0.5 % of treatment plant design capacity criteria and discharges <25,000 gallons per day or;

b. Is a member of a group of similar industrial users which, taken together, have the potential to cause pass through or interference at the POTW (e.g. facilities which develop photographic film or paper, and car washes).

The Department may determine that a discharger initially classified as a potential significant industrial user should be managed as a significant industrial user.

Quantitation Level (QL)-- A calculated value five times the MDL (method detection level).

Significant Industrial User (SIU)--

1) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N and;

2) Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority* on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement (in accordance with 40 CFR 403.8(f)(6)).

Upon finding that the industrial user meeting the criteria in paragraph 2, above, has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority* may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

*The term "Control Authority" refers to the Washington State Department of Ecology in the case of non-delegated POTWs or to the POTW in the case of delegated POTWs.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, wetlands, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Suspended Solids (TSS)--Total suspended solids are the particulate materials in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Upset--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Water Quality-based Effluent Limit--A limit on the concentration or mass of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

APPENDIX C--TECHNICAL CALCULATIONS

Several of the Excel® spreadsheet tools used to evaluate a discharger's ability to meet Washington State water quality standards can be found on the Department's homepage at http://www.ecy.wa.gov.

Below is some Port Angeles WWTP data used to determine appropriate limits and monitoring.

Port Angeles WWTP Data											
	Flow (MGD)	CBODin (mg/L)	TSSin (mg/L)	CBODeff (mg/L)	CBODeff (%rem)	TSSeff (mg/L)	TSSeff (%rem)	Cl (mg/L)	Cl (max)	Temp	Fecal (/100ml)
Jun-01	2	119	217	5	95	8	96	0.09	0.41	16	45
May-01	2.17	120	243	6	95	7	97	0.11	0.37	14.1	17
Apr-01	2.46	117	254	7	94	7	97	0.11	0.31	12.4	25
Mar-01	2.49	115	257	6	95	7	97	0.14	0.39	11.5	31
Feb-01	3.13	104	257	4	96	6	97	0.14	0.46	10.4	6
Jan-01	3	93	186	6	93	9	95	0.18	0.49	11.4	22
Dec-00	2.6	142	194	6	96	9	95	0.14	0.5	11.7	19
Nov-00	2.5	187	219	6	97	9	95	0.11	0.28	13.3	24
Oct-00	2.13	207	245	4	98	7	97	0.11	0.41	16	15
Sep-00	1.89	256	344	4	98	6	98	0.09	0.34	17.9	62
Aug-00	1.96	389	597	4	99	7	99	0.11	0.3	18.3	52
Jul-00	2	366	600	5	99	8	99	0.12	0.31	17.6	29
Jun-00	2.04	315	450	5	98	5	99	0.13	0.34	16.1	38
May-00	2.17	297.3	438.3	5.6	98.1	6.8	98.3	0.12	0.46	14.5	96
Apr-00	2.2	298	497.9	5.9	98	7.1	98.4	0.17	0.45	13.1	39
Mar-00	2.54	219.1	291	5.5	97.3	5.7	97.8	0.1	0.41	11.6	29
Feb-00	2.9	130.3	206.2	4.3	94.9	4.4	97.4	0.13	0.44	10.8	11
Jan-00	3.6	111.4	195.7	3.97	96.3	5.3	97.1	0.18	0.49	10.6	14
Dec-99	4.29	115.9	188	4.42	95.6	5	96.7	0.08	0.27	11.8	21
Nov-99	3.31	148.9	198.3	4	97	6.6	96.3	0.16	0.44	13.4	30
Oct-99	2.11	225.1	374.1	5.37	97.2	6.8	97.9	0.17	0.44	15.4	13
Sep-99	1.83	223.4	327.6	4.02	98.2	8.2	97.3	0.07	0.17	17.3	59
Aug-	1.97	208.3	325.5	4.03	98	7.7	97.3	0.12	0.4	18.2	66

99											
Jul-99	2.13	281.8	397.9	4.35	98.4	7.6	97.8	0.11	0.41	16.8	37
Jun-99	2.16	277.6	340.9	3.58	98.4	6.2	97.9	0.09	0.36	15.7	49
May-99	2.19	208.1	255.1	3.6	98.2	5.5	97.7	0.11	0.44	13.9	21
Apr-99	2.52	152.6	208.8	3.77	97.4	5.5	97.2	0.14	0.47	12.2	13
Mar-99	4.2	98	128	4	95	8.7	92	0.1	0.3	10.5	18
Feb-99	6	58	82	3.5	93	8.2	89	0.2	0.6	9.6	14
Jan-99	4.9	107	120	3.5	95	7	91	0.1	0.6	11	24
Dec-98	4.1	102	142	3.3	96	7.4	94	0.1	0.3	11.6	14
Nov-98	3.6	131	170	3.7	97	6.7	94	0.1	0.6	13.8	60
Oct-98	2	209	319	4.3	98	5.2	98	0.1	0.6	16.5	33
Sep-98	1.9	235	316	3.4	99	7.3	98	0.1	0.6	18.5	17
Aug-98	1.6	226	322	3.6	98	6	98	0.1	0.6	18.9	30
Jul-98	2.1	209	237	3.7	98	6.2	97	0.2	0.6	18.1	29

Port Angeles WWTP Data											
	Flow (MGD)	CBODin (mg/L)	TSSin (mg/L)	CBODeff (mg/L)	CBODeff (%rem)	TSSeff (mg/L)	TSSeff (%rem)	Cl (mg/L)	Cl (max)	Temp	Fecal (/100ml
LIMIT	6.7			25	85	30	85	0.25	0.65		20
AVG 3YR	2.685	188.966	281.786	4.539	96.805	6.836	96.586	0.123	0.426	14.180	31.1666
95th	4.442	327.75	522.675	6	99	9	99	0.185	0.6	18.35	6
99th	5.615	380.95	598.95	6.65	99	9	99	0.2	0.6	18.76	85.
AVG 2YR	2.475	199.562	312.646	4.977	96.75	6.925	97.220	0.124	0.387	14.175	33.3333
AVG 1YR	2.36	184.583	301.083	5.25	96.25	7.5	96.833	0.120	0.380	14.216	28.9166

The above data plus other data was used in excel spreadsheets to help determine limits. The below spreadsheet was used to determine if a reasonable potential exists for other parameters to exceed standards. In the below spreadsheet, the acute dilution factor used was 38 and the chronic dilution factor used was 510.

	Metal Criteria Translator as decimal	Metal Criteria Translator as decimal	Ambient Conc. (metals as dissolved)	Acute	Chronic	Acute Mixing Zone	Chronic Mixing Zone	LIMIT REQ'D?	Effluent percent value		Max effluent conc. measured metals as total recoverable	Coeff Var.		# of samples	Multiplier
Parameter	Acute	Chronic	ug/L	ug/L	ug/L	ug/L	ug/L			Pn	ug/L	CV	s	n	
Antimony			0			0.86	0.06	NO	0.95	0.779	20.00	0.60	0.55	12	1.63
Arsenic	1.0	1.0	0	69.0	36.0	0.13	0.01	NO	0.95	0.779	3.00	0.60	0.55	12	1.63
Ammonia			400.0	3340.	500.0	105 1.89	448.57	NO	0.95	0.762	15000.00	0.60	0.55	11	1.68
Berylliium	0.95	0.95	0			0.20	0.02	NO	0.95	0.779	5.00	0.60	0.55	12	1.63
Cadmium	0.99	0.99	0	42.0	9.3	0.09	0.01	NO	0.95	0.779	2.00	0.60	0.55	12	1.63
Chromium	0.99	0.99	0	1100.	50.0	0.42	0.03	NO	0.95	0.779	10.00	0.60	0.55	12	1.63
Copper	0.83	0.83	0	4.8	3.1	4.62	0.34	NO	0.95	0.779	130.00	0.60	0.55	12	1.63
Lead	0.95	0.95	0	210.0	8.1	0.16	0.01	NO	0.95	0.779	4.00	0.60	0.55	12	1.63
Mercury	0.85		0	1.80	0.025	0.01	0.00	NO	0.95	0.779	0.20	0.60	0.55	12	1.63
Nickel	0.99	0.99	0	74.0	8.2	0.42	0.03	NO	0.95	0.779	10.00	0.60	0.55	12	1.63
Seleniium	1.00	1.00	0	290.0	71.0	0.17	0.01	NO	0.95	0.779	4.00	0.60	0.55	12	1.63
Silver	0.85	0.85	0	1.90		0.36	0.03	NO	0.95	0.779	10.00	0.60	0.55	12	1.63
Thalliium	0.95	0.95	0	2130.		1.22	0.09	NO	0.95	0.779	30.00	0.60	0.55	12	1.63
Zinc	0.95	0.95	0	90.0	81.0	2.43	0.18	NO	0.95	0.779	60.00	0.60	0.55	12.00	1.63
Cyanide			0	1.0	1.0	1.28	0.10	NO	0.95	0.779	30.00	0.60	0.55	12.00	1.63
Chlorine			0	13.0	7.5	9.77	0.73	NO	0.95	0.995	630.00	0.60	0.55	639.00	0.59

APPENDIX D--RESPONSE TO COMMENTS

No comments were received during the 30-day public comment period. After the comment period closed, the Permittee submitted four comments that were responded to in a separate letter. No changes were made to the Permit or Fact Sheet.